Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Facilitating the Provision of	)	
Spectrum-Based Services to Rural Areas and	)	WT Docket No. 02-381
Promoting Opportunities for	)	
Rural Telephone Companies	)	
To Provide Spectrum-Based Services	)	
	)	
2000 Biennial Regulatory Review	)	
Spectrum Aggregation Limits	)	WT Docket No. 01-14
For Commercial Mobile Radio Services	)	
	)	
Increasing Flexibility To Promote Access to and the	)	
Efficient and Intensive Use of Spectrum and the	)	WT Docket No. 03-202
Widespread Deployment of Wireless Services, and	)	
To Facilitate Capital Formation	)	
	)	

To: The Commission

COMMENTS OF MDS AMERICA, INCORPORATED IN RESPONSE TO NOTICE OF PROPOSED RULEMAKING

I. INTRODUCTION AND OVERVIEW

MDS America, Incorporated ("MDS America"), by its attorneys, submits these comments in support of Commission proposals in the above-referenced docket[1] that would provide flexibility with respect to technical rules governing radio services in order to promote deployment of additional communications services to rural areas.

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[1] *In re Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies to Provide Spectrum-Based Services, 2000 Biennial Regulatory Review Spectrum Aggregation Limits for Commercial Mobile Radio Services, Increasing Flexibility to Promote Access to and the Efficient and Intensive Use of Spectrum and the Widespread Deployment of Wireless Services, and to Facilitate Capital Formation*, WT Docket Nos. 02-381, 01-14, and 03-222, *Notice of Proposed Rulemaking* (rel. Oct. 6, 2003) ("*Notice*" or "*NPRM*").

In particular, MDS America urges the Commission to adopt a two-tiered approach to the technical rules for the Multichannel Video Distribution and Data Service ("MVDDS") that increases the permissible operating parameters for MVDDS operations in rural areas. MDS America has been an active participant in the MVDDS rulemaking docket and has qualified to participate in the upcoming MVDDS auction. MDS America also plans to sell equipment to other MVDDS operators. The approach of increasing the permissible MVDDS operating parameters in rural areas is consistent with the recommendations of the Commission's Spectrum Task Force Report[2] and the reports on spectrum efficiency[3] and engineering[4] used in its development. Moreover, the Commission initially proposed technical rules for MVDDS that allowed greater operating parameters in rural areas.[5] Although it ultimately adopted uniform technical rules for rural and urban areas, the Commission took the unusual step of expressly inviting MVDDS licensees to request appropriate waivers of the MVDDS technical rules in rural areas.[6]

MDS America submits that higher MVDDS operating parameters can be implemented in rural areas without causing harmful interference to existing Direct Broadcast Satellite ("DBS") operations in the same frequency band.[7] This would permit economically and technically efficient MVDDS systems to be widely and rapidly deployed in rural areas. MDS America therefore urges the Commission to act expeditiously to address MVDDS technical parameters as

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[2] *See* pp. 58-60 of the Spectrum Policy Task Force Report issued in ET Docket No. 02-135 on November 15, 2002 ("*Spectrum Policy Task Force Report*").

[3] *See* p. 19 of the Report of the Spectrum Efficiency Working Group issued November 15, 2002 ("*Spectrum Efficiency Report*").

[4] *See* pp. 45-46 of the Report of the Spectrum Rights and Responsibilities Working Group issued November 15, 2002 ("*Spectrum Rights and Responsibilities Report*").

[5] *First Report and Order and Further Notice of Proposed Rulemaking*, FCC 00-418, ET Docket No. 98-206, 16 FCC Rcd 4096 (2000) at Appendix E, ¶ 7.

[6] *See, e.g., Fourth Memorandum Opinion and Order*, FCC 03-97, ET Docket No. 98-206, 18 FCC Rcd 8428, ¶ 88 (2003).

[7] *See id.*, ¶ 86.

part of its rural service improvement initiative (and without waiting for resolution of other issues raised in this proceeding) so that future MVDDS licensees can use the more flexible rural parameters in designing their initial systems once the MVDDS auctions and long-form application reviews have been completed early next year.[8] This approach would also avoid the unnecessary expenditure of applicant and Commission resources, and the attendant uncertainties and construction delays, that would result from using potentially lengthy and complex waiver procedures. Adoption of the two-tiered MVDDS technical rules previously proposed by the Commission and supported by MDS America in the MVDDS docket would further the Commission's objectives in this proceeding and would therefore serve the public interest.

II. ADOPTING HIGHER POWER AND RELATED LIMITS FOR MVDDS IN RURAL AREAS WOULD BE CONSISTENT WITH THE FCC'S SPECTRUM POLICIES.

In the *NPRM*, the Commission recognized that many U.S. citizens, particularly those living in rural areas, are under-served with respect to communications facilities and services.[9] In particular, the Commission noted that many residents of rural areas lack access to broadband data services because they are unserved by cable and Digital Subscriber Line ("DSL") facilities, and the cost of installing such facilities is prohibitive. These citizens also lack a choice of multichannel video providers and may have access only to direct broadcast satellite ("DBS") services, which may not always carry their local channels.[10] Moreover, residents of rural areas may be unable to receive local television stations over the air, even through low-power translators.

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[8] The MVDDS auction is scheduled to commence on January 14, 2004. *Public Notice*, DA 03-2354, Auction of Licenses in the Multichannel Video Distribution and Data Service Rescheduled for January 14, 2004 (rel. Aug. 28, 2003).

[9] *See NPRM*, ¶ 2.

[10] *See, e.g.*, http://www.directv.com/DTVAPP/LocalChannelsAction.do , which states that local channels are available to half of DirecTV's customers. Residents of Alaska and Hawaii may also have more limited

In authorizing MVDDS, the Commission acted to ameliorate this situation. The Commission specifically recognized that the forthcoming MVDDS licensing and build-out may be an important and economical means of bringing both high-speed data and internet access services and multichannel video services to underserved areas and their residents. In authorizing the new service, the Commission said:

> With current growth rates, it appears possible that smaller markets and rural areas may not be provided with "local-into-local" [video] service from DBS for the foreseeable future. The combination of these factors leads us to believe that a terrestrial service, such as MVDDS, could include transmitters sited in rural areas and thus can fill this void.[11]

The FCC's Spectrum Policy Task Force and many of its working groups have recommended several steps the Commission should take to encourage the deployment of telecommunications services in rural areas. The Commission's Spectrum Policy Task Force Report ("Task Force") acknowledged that economic and technical considerations in rural areas are different than those applicable to urban areas, which may justify applying different rules to spectrum usage in urban and rural areas.[12] Further, parties participating in that Report advocated higher permissible power levels for rural areas on the theory that where there is less congestion, higher permissible power levels would allow for fuller usage of spectrum.[13] The Task Force recommended that technical service rules should afford spectrum users the flexibility to operate at higher power in less congested areas, which are typically rural, so long as such higher power operations do not cause interference and do not receive additional interference protection.[14] This position is consistent with recommendations of the Spectrum Rights and Responsibilities

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programming options with DBS service, despite the Commission's specific concern in this area, because of limitations of satellite footprints.

[11] *Memorandum Opinion and Order and Second Report and Order*, FCC 02-116, ET Docket No. 98-206, 17 FCC Rcd 9614, ¶ 23 (2002) ("*MVDDS Second R&O*").

[12] *Spectrum Policy Task Force Report*, at p. 58.

[13] *Id.*, at p. 59.

Working Group, which advocates exploring taking different approaches to rural and urban spectrum.[15] Similarly, the Spectrum Efficiency Working Group observed that it would generally be desirable for maximum transmitted power levels to be lowered in urban environments and increased in rural environments and noted that this approach may enable service to be provided in rural areas where there is not sufficient economic justification to do so now.[16]

The Commission's *NPRM* in the current proceeding recognizes these points, stating that "increasing the range of radio systems [by increasing power levels] is one means of making it more economical to provide spectrum-based radio services in rural areas by potentially lowering infrastructure costs."[17] Thus, adoption of increased operating parameters for MVDDS would be consistent with the Commission's overall spectrum policies, as well as with its efforts to bring expanded service to rural areas in this docket.

III. INCREASING MVDDS OPERATING PARAMETERS WOULD BE TECHNICALLY FEASIBLE AND WOULD NOT CAUSE HARMFUL INTERFERENCE TO DBS OPERATIONS IN THE 12 GHZ BAND.

The initial proposed technical rules for MVDDS contained a two-tiered structure, allowing higher levels of equivalent isotropic radiated power ("EIRP") in rural areas than in urban areas. However, in its final rules, the Commission backed away from this approach and adopted a uniform, nationwide EIRP standard.[18] Although the Commission declined to permit higher limits in rural areas (as MDS America had advocated), the Commission expressly acknowledged that there may be technical merit to allowing higher EIRP and EPFD in rural areas and invited MVDDS providers to file petitions for waiver of the general MVDDS EIRP

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14 *Id.*

15 *Spectrum Rights and Responsibilities Report*, at p. 45.

16 *Spectrum Efficiency Report*, at p. 19.

17 *NPRM*, ¶ 52.

and EPFD limits.[19] Thus, the Commission made clear that it was not closing the door on higher operating parameters for MVDDS operations in rural areas.

MDS America is concerned, however, that the waiver process may be time-consuming and have the unintended consequence of slowing MVDDS deployment in rural areas. To provide MVDDS operators greater certainty and to promote rapid MVDDS deployment in rural areas, MDS America urges the Commission expressly to authorize higher EIRP and EPFD limits in rural areas as part of this proceeding. Attached as Exhibit A is a map depicting MDS America's proposed EIRP and EPFD levels for urban and rural areas. In the alternative, to speed MVDDS deployment, MDS America requests the Commission to provide for streamlined treatment of waivers to exceed the general MVDDS EIRP and EPFD limits in rural areas so long as proposed operations meet specified technical parameters.

As MDS America has explained fully in other submissions in the MVDDS proceeding,[20] higher rural power and related limits for MVDDS would not only ensure the viability of MVDDS in rural areas, but also would ensure that harmful interference to DBS reception is avoided. Allowing higher rural power for MVDDS systems makes it practical to mount MVDDS transmitters on tall towers, which make it more economically feasible to serve sparsely populated areas. Moreover, using tall towers would also provide an important technical benefit, in addition to improving the business case for serving rural areas. Significantly, as recognized by the *Mitre Report*, the use of tall towers (of 200 meters or more) would minimize potential interference with DBS reception by allowing MVDDS operators to take advantage of vertical

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[18] *MVDDS Second R&O*, ¶ 198. In addition, the Commission adopted four region-specific equivalent power flux density ("EPFD") limits that are uniform region-wide to strike a balance between accommodating co-primary DBS earth stations and facilitating MVDDS deployment. *Id.*, ¶ 72.

[19] *Fourth Memorandum Opinion and Order*, FCC 03-97, WT Docket No. 98-206, 18 FCC Rcd 8428, ¶ 88 (2003).

antenna angular discrimination and other advanced interference mitigation techniques to make harmful interference with DBS unlikely.[21] Keeping rural power limits as low as urban ones, however, effectively eliminates the use of tall towers, jeopardizing not only the business case to build out MVDDS systems in rural areas, but also the use of several DBS interference mitigation techniques that would otherwise be available. Thus, allowing increased rural EIRP and EPFD limits for MVDDS is a "win-win" approach that would promote the public interest in maximizing service to the public and providing a competitive choice of providers for all citizens, in both rural and urban areas.

In the alternative, MDS America urges the Commission to adopt a streamlined waiver process for MVDDS operators to allow them to exceed the general MVDDS EIRP and EPFD limits in rural areas so long as the waivers satisfy specific technical criteria. MDS America is concerned that although the Commission invited MVDDS licensees to seek waivers in order to exceed EIRP and EPFD limits in rural areas, the waiver process may prove to be too lengthy or complex to provide MVDDS licensees the certainty they require in order to move forward deploying service in rural areas. A streamlined waiver process would mitigate these concerns, and it would facilitate expeditious construction of MVDDS systems in rural areas, thereby promoting the public interest by maximizing service to the public.

IV. CONCLUSION

MDS America therefore urges the Commission to act expeditiously to address MVDDS technical parameters as part of its rural service improvement initiative -- and without waiting for resolution of other issues raised in this proceeding -- so that MVDDS licensees can use the more

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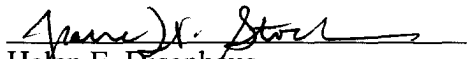
[20] *See, e.g., Ex Parte* Filing of MDS America, Incorporated in ET Docket No. 98-206 filed October 15, 2002. A copy of this filing is attached hereto as Exhibit B.

[21] *MITRE Corporation*, "Analysis of Potential MVDDS Interference to DBS in the 12.2 – 12.7 GHz Band" (filed Apr. 23, 2001 in ET Docket No. 98-206) ("*MITRE Report*") at xvii, 6-2; and 5-6, 5-7.

flexible rural parameters in designing their initial systems once the MVDDS auction concludes early next year. In the alternative, in order to speed MVDDS deployment and provide greater certainty to MVDDS licensees, MDS America respectfully requests that the Commission adopt a streamlined MVDDS waiver process which would enable licensees satisfying certain technical showings to exceed the general MVDDS EIRP and EPFD limits in rural areas. MDS America believes that these policies would accelerate the deployment of MVDDS to rural areas, bringing new telecommunications choices to millions of Americans.

Respectfully submitted,



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Dated: December 29, 2003

Counsel to MDS America, Incorporated

EXHIBIT A

EPFD Limits (Rural, Urban) for DBS 45 cm Antenna

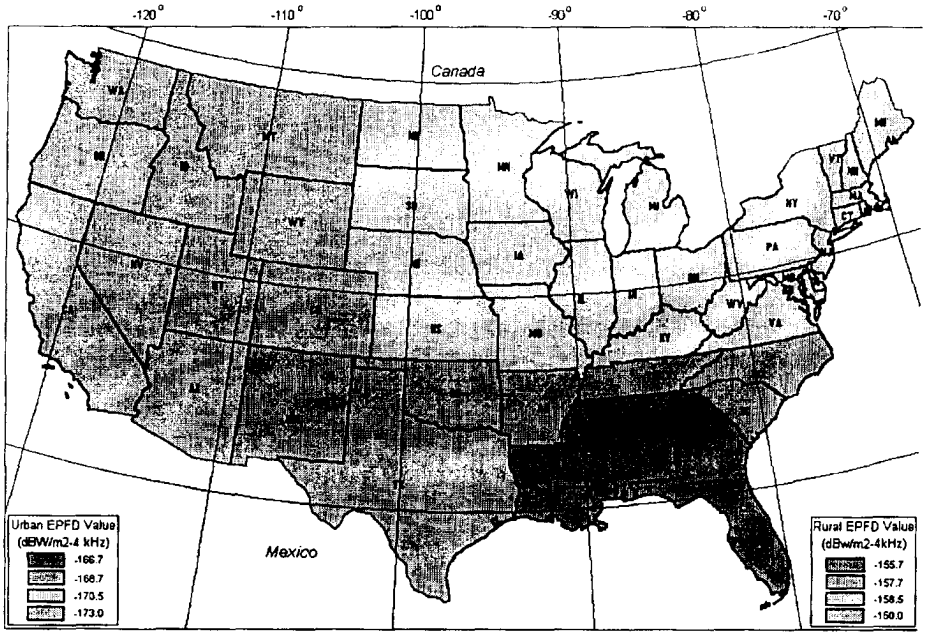

EXHIBIT B

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October 15, 2002

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
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Re: MDS America, Incorporated
***Ex Parte* Filing, ET Docket No. 98-206; RM-9147; RM-9245;**
Use of Tall Towers with Higher Rural Power Limits Mitigates DBS Interference while Ensuring Viable MVDDS Rural Coverage

Dear Ms. Dortch:

MDS America, Incorporated ("MDS America") has sought reconsideration of the recent Order in the above-referenced docket establishing rules for Multichannel Video Distribution and Data Service ("MVDDS"). In particular, MDS America is advocating higher rural power and related limits, because such limits not only would ensure the viability of MVDDS in rural areas, where competition is needed most, but also would ensure that harmful interference to DBS reception is avoided in both urban and rural areas. Conversely, lower rural power limits would make such interference more likely (due to the engineering that would be necessary for any MVDDS licensee to make its systems economically feasible in urban areas under the current rules). Because several parties and Commission staff have concerns about the apparent paradox of lower power limits likely leading to greater interference, this *ex parte* submission is intended to provide additional information that may be helpful in resolving these concerns.

In its Order establishing service rules for MVDDS,[1] the Commission, despite having proposed a two-tiered regime with higher power limits for MVDDS installations in rural areas,[2] decided to impose on MVDDS transmitters a uniform nationwide equivalent isotropic radiated power ("EIRP") limit of 14 dBm per 24 MHz.[3] The Commission also imposed four regional equivalent power flux density ("EPFD") limits that are uniform across a region, regardless of population density,[4] and an in-band PFD limit of –135 dBm/m^2/4kHz at distances greater than 3 km at the surface of the earth,[5] which MDS America has urged the Commission to eliminate or modify for rural areas to -109 dBW/m^2/4 kHz.[6]

In brief, allowing higher rural power for MVDDS systems makes it practical to mount MVDDS transmitters on tall towers, as MITRE Corporation had recommended where possible. Tall towers make it economically feasible to serve sparsely populated areas while preventing interference to DBS systems in urban and rural areas by allowing vertical antenna discrimination techniques, service from low-powered repeaters, and use of non-powered reflectors. As discussed in MDS America's Petition for Reconsideration and Replies to opposition pleadings,[7] from both an economic perspective and a technical perspective, it is simply not reasonable to treat sparsely populated rural areas outside the top 50 television markets in the same manner as densely populated urban areas. MDS America believes that the Commission should reconsider its approach with respect to this matter for two reasons:

First, from the economic perspective, under the current EIRP and EPFD limits, outside urban areas an MVDDS operator cannot serve a large enough area with a sufficient population to

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[1] Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range; Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band by Direct Broadcast Satellite Licensees and Their Affiliates; and Applications of Broadwave USA, PDC Broadband Corporation, and Satellite Receivers, Ltd. to Provide a Fixed Service in the 12.2-12.7 GHz Band, *Memorandum Opinion And Order and Second Report and Order*, FCC 02-116 (released May 23, 2002) (hereafter, "*MVDDS Order*").

[2] *First Report and Order and Further Notice of Proposed Rule Making*, FCC 00-418, ET Docket No. 98-206, 16 FCC Rcd 4096 (2000) at Appendix E, ¶ 7.

[3] *MVDDS Order* at ¶¶ 68, 198. The 39 dBm rural EIRP limit recommended by MDS America is lower than that initially proposed by the Commission.

[4] *Id.* at ¶¶ 68, 83.

[5] *Id.* at ¶ 112.

[6] MDS America urged the Commission to eliminate the maximum PFD limit as premature, unnecessary to protect NGSOs, and prohibitively preclusive of MVDDS. In this connection, see Teledesic Press Release, "Teledesic Suspends Work Under Satellite Contract," http://www.teledesic.com/newsroom/nRele.htm (Sept. 30, 2002).

[7] *See generally* MDS America's *Petition for Reconsideration.*

enable an economically feasible system. Short towers with low power result in small service areas, and in rural areas, those service areas have very few people. If an MVDDS operator wanted instead to use towers of 200 to 300 meters above ground level ("AGL") to increase the geographic area served, without higher power, the "exclusion zone" of subscribers outside the main beam of the MVDDS signal from a tower would virtually encompass the universe of potential subscribers. Thus, keeping the rural power limits as low as the urban ones effectively eliminates the use of tall towers (or the placement of towers on a nearby ridge) as an option for providing economically viable broadband MVDDS service to rural areas. With higher power limits and tall towers, however, the "donut hole" exclusion zone is small in proportion to the large geographic area served directly by the tall tower-mounted MVDDS transmitter (and the few rural residents within the exclusion zone adjacent to a tall tower can be served by the MVDDS system indirectly via inexpensive, non-powered reflectors). Higher MVDDS rural power limits are therefore critical to ensure that sparsely populated states such as Wyoming or Montana will have a choice of service providers for broadband video and data services, and therefore higher rural limits are critical to achievement of one of the primary goals of establishment of the MVDDS. Because, as shown below, higher power can be used in rural areas without causing harmful interference to DBS reception, MVDDS service to rural areas is quite feasible if the needlessly restrictive power limit rules are amended to permit it.

Second, the Commission should raise the power limits in rural areas from the technical, interference-avoidance perspective because retention of the current power level restrictions in rural areas would make it impossible for the MVDDS operator to follow one of the key recommendations of the *MITRE Report: the use of tall towers (of 200 meters or more AGL) to minimize potential interference with DBS reception.*[8] In rural areas, if not in urban areas,[9] use of such tall towers is possible if power limits are sufficiently high. By using tall towers, the MVDDS system designer can take advantage of vertical antenna angular discrimination and other advanced interference mitigation techniques to make harmful interference with DBS operations unlikely. But if the Commission continues to rely exclusively on compliance with low power restrictions to limit interference to DBS, for economic reasons, rural MVDDS systems will never be built.

With higher power limits, and tall towers, however, rural MVDDS systems will be built, and without harmful interference to DBS despite the higher power. This particular issue is one of geometry. As shown in the videotapes of the Andorran installation of the MDS International HyperCable® system of which MDS America is the U.S. licensee and distributor,[10] when the MVDDS transmitter is up high, and has adequate power, it can economically serve a wide area. Unlike the situation of DBS satellites, whose great distance from earth means that power levels and elevation are essentially uniform across the service area, antenna height and power are the

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[8] *MITRE Corporation*, "Analysis of Potential MVDDS Interference to DBS in the 12.2 – 12.7 GHz Band" (filed Apr. 18, 2001) (*"MITRE Report"*) at xvii, 6-2; *see also id.* at 5-6, 5-7.

[9] *See id.* at 6-2.

[10] *See* http://128.121.184.103/resources/video.asp ; *see also Ex Parte Submission of MDS America, Incorporated* (Mar. 6, 2002).

important factors that *define* the MVDDS service area. Because the DBS elevation angles are fixed, an MVDDS system can be designed to differentiate itself from the DBS systems by taking advantage of different elevation angles.

When MVDDS transmitters are mounted on tall towers, the MVDDS transmission vectors and DBS receiver pointing angle within the MVDDS service area vary at angles far exceeding the 9° separation suggested by the International Telecommunications Union. (Because the satellites are separated from one another by 9° or more, unless the MVDDS transmitter tower was more than 750 meters tall, the MVDDS system could not have a transmission vector of more than 10° above the horizon for any DBS receiver.) The DBS reception antenna, aimed at the high-powered satellite, can discriminate between the DBS and MVDDS signals, whether or not the MVDDS transmitter is to the south of the DBS receiver, just as the receive dish rejects the signal of another co-frequency satellite because of orbital slot angular discrimination.[11] This factor helps to prevent harmful interference with DBS reception despite the fact that higher power is used with the taller towers to increase the MVDDS service area.

Further, the use of tall towers can also be an important mitigation technique in avoiding harmful interference to DBS reception in *urban* areas. As MITRE recognized,[12] it is extremely difficult to erect tall towers in urban locations. The result is that MVDDS transmitters meeting the current low power limits but constrained by little else are likely to be located throughout urban areas at relatively low heights, and they almost certainly would be omni-directional, producing signals likely to bounce off buildings, causing multipath problems in "urban canyons" where multiple buildings of eight or more stories are clustered in close proximity. MVDDS signals would not be perceived as signals from "satellites on the ground" because there would be no vertical antenna discrimination, and the MVDDS signals could cause interference, absent use of appropriate mitigation techniques. (These multipath problems take two forms: they make it hard for the MVDDS operator to distribute its signal to its customers, and some of the MVDDS signal transmissions will end up pointing directly into the look angle of the satellite reception equipment, the worst-case scenario from the perspective of the DBS receiver.)

These urban multipath problems can, however, be avoided, if *rural* power limits are raised. Urban areas can receive MVDDS service via extremely low-powered repeaters fed by high-powered MVDDS transmitters mounted on taller towers outside the urban areas, with strategically placed non-powered reflectors used to control MVDDS emissions and direct them to MVDDS, not DBS, receivers. These reflected signals, rather than being randomized and uncontrolled like multipath emissions, would be specifically directed by the MVDDS operator. Thus, deployment of taller towers with higher power erected *outside* the urban areas provides a useful means of avoiding the multipath problem *within* urban areas. This comports with the real-world experience of MDS International.

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[11] *See MITRE Report* at 5-8, 5-10.

[12] *Id.* at 6-2.

In sum, without higher power (and without commensurate less restrictive EPFD and PFD limits) at least in rural areas, there will be both less MVDDS and more interference to DBS. The Commission can, however, avoid this undesirable result by reverting to the rural/urban distinction included in its previously proposed rules.

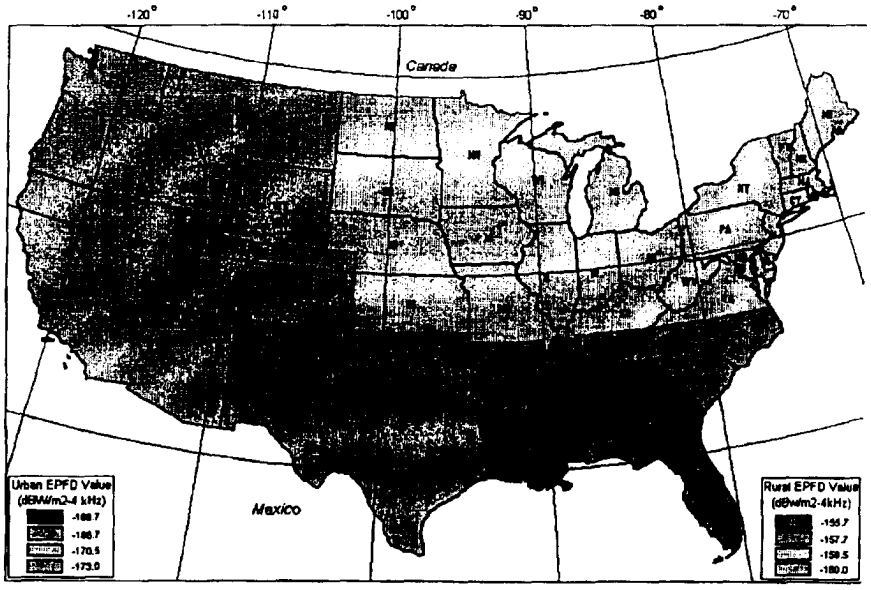
MDS America therefore urges the Commission to adopt an EIRP limit of 39 dBm for areas outside the top 50 markets, and EPFD limits that also observe the rural/urban distinction and are at the levels shown on the attached map. The PFD limit should be eliminated, or at least reduced to -109 dBW/m^2/4 kHz. This "win-win" approach will promote the public interest in maximizing service to the public and providing a competitive choice of providers for all citizens, regardless of whether they live in rural or urban areas.

Respectfully submitted,

MDS America, Incorporated

By: Nancy Killien Spooner
Helen E. Disenhaus
Its Counsel

EPFD Limits (Rural, Urban) for DBS 45 cm Antenna



CERTIFICATE OF SERVICE

I hereby certify that on this 15th day of October, 2002, a true and correct copy of the foregoing was served via e-mail (denoted by *) and hand delivery, on the following individuals:

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